APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,762	09/23/2005	Remy Bruno	0512-1268	4661

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EXAMINER
LAO, LUN S

ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
06/15/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>16 February 2010</u>.

2a) ☐ This action is **FINAL**.　　2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>74-94</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>74-76, 78,80, 82-84, 86-88, 90, 92 and 94</u> is/are rejected.

7) ☒ Claim(s) <u>77,79,81,85,89,91 and 93</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☐ All　b) ☐ Some * c) ☐ None of:

　　　1. ☐ Certified copies of the priority documents have been received.

　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　 application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Introduction

1.　　　This action is in response to the amendment filed on 02-16-2010. Claims 1-73

have been canceled and claims 74, 77, 81, 86 and 89 have been amended. Claims 74-

94 are pending.

Continued Examination Under 37 CFR 1.114

2.　A request for continued examination under 37 CFR 1.114, including the fee set forth

in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02-16-

2010 has been entered.

Drawings

3. The drawings are objected to because in figures 3 and 5 (14) "imput of a processing

instruction" should be <u>input of a processing instruction</u>. Corrected drawing sheets in

compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. The figure or figure number of an amended drawing

should not be labeled as "amended." If a drawing figure is to be canceled, the

appropriate figure must be removed from the replacement sheet, and where necessary,

the remaining figures must be renumbered and appropriate changes made to the brief

description of the several views of the drawings for consistency. Additional replacement

sheets may be necessary to show the renumbering of the remaining figures. Each

drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the

drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 74, 78, 80, 82-84, 86, 90, 92, and 94 are rejected under 35 U.S.C. 102(e) as

being anticipated by Moorer(US PAT.6,904,152).

Consider claim 74, Moorer teaches a method for determining filtering combinations of

a spatial processing operation, the filtering combinations ($C_{i,m}^{?}$) being intended to be

applied to an initial sound field representation(see fig.6 (135)) $(P_{l,m}^{(I)})$ formed by

coefficients representative of the initial sound field in time(see col. 3 line 3-34) and in

the three spatial dimensions, in order to provide a modified sound field

representation $(P_{l,m}^{(Y)})$ formed by coefficients representative field representative of that

field in time and in the three spatial dimensions(see figs. 1,3,9 and 10), the method

comprising:

defining via a programmed computer processor (reads on DSP see col. 6 line 35-62))

the processing operation by a set of at least one directivity function, establishing via a

programmed computer processor(DSP) spherical harmonic coefficients of each

directivity function(see figs. 1 and 3 and col.3 line 62-col. 4 line 65); determining via a

programmed computer processor(DSP) the filtering combinations(reads on equation

(1)) from the spherical harmonic coefficients(see col. 5 line 1-col. 6 line 67).

Consider claims 78, 80 and 82 Moorer the predetermined operation is the

multiplication operation, for each direction, of the value of the directivity function of the

initial sound field(see col.3 line 5-29) and the directivity function of the processing

operation(see figs 1-3, 9 and 10 and col. 4 line 6-col. 5 line 63); and the predetermined

operation is the convolution operation, for each direction, of the value of the directivity

function of the initial sound field(see figs 1-3, 5, 9,10) and see col.3 line 5-29) and the

directivity function of the processing operation(see figs 1-3, 6- 10 and col. 17 line 18-col.

18 line 63); and the processing operation is a distortion, wherein the set of at least one

directivity function comprises N pairs of directivity functions which form a set of

distortion pairs representative of the distortion, and wherein the filtering combinations

are determined from the spherical harmonic coefficients of the N pairs of directivity functions(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63).

Consider claims 90, 92 and 94 Moorer teaches the predetermined operation is the multiplication operation, for each direction, of the value of the directivity function of the initial sound field (see col.3 line 5-29) and the directivity function of the processing operation(see figs 1-3, 9 and 10 and col. 4 line 6-col. 5 line 63); and wherein the predetermined operation is the convolution operation, for each direction, of the value of the directivity function of the initial sound field (see figs 1-3, 5, 9,10) and see col.3 line 5-29) and the directivity function of the processing operation(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63); and wherein the processing operation is a distortion, wherein the set of at least one directivity function comprises N pairs of directivity functions which form a set of distortion pairs representative of the distortion, and wherein the filtering combinations are determined from the spherical harmonic coefficients of the N pairs of directivity functions(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63).

Consider claim 83, Moorer teaches a method for applying a spatial processing operation to an initial sound field(see figs. 1-3 and see col.3 line 5-28), the method comprising: - establishing an initial sound field representation formed by coefficients representative of the initial sound field in time and in the three spatial dimensions(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63), determining filtering combinations of the processing operation, according to the method of claim 74(see figs. 1 and 3 and see the rejection for claim 74), and applying the filtering combinations to the initial sound field representation(see col. 4 line 6-col. 5 line 40).

Consider claim 84, Moorer teaches a method for applying a combination of spatial processing operations to an initial sound field(see fig. 1 and 6 (135) and see col.3 line5-28), the method comprising: - establishing an initial sound field (see fig. 1 and 6 (135) and see col.3 line 5-28) representation formed by coefficients representative of the initial sound field in time and in the three spatial dimensions(see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63), determining filtering(reads on the equation 1 and DSP) combinations of each processing operation, the filtering combinations being intended to be applied to the initial sound field representation(see figs. 1 and 6 (135) and see col.3 line 5-28), in order to provide a modified sound field(see fig.6 (141,145)) representation formed by coefficients representative of that field in time and in the three spatial dimensions(see figs. 1,3,9 and 10 and see col.5 line 1-col. 6 line 67), wherein the filtering combinations of at least one processing operation is achieved by the method of claim 74 (see col. 4 line 6-col. 5 line 40 and see rejection for claim 74), - determining overall filtering combinations by combining the filtering combinations(see fig.6 (141,145) of each processing operation, and - applying the overall filtering combinations to the initial sound field representation(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63).

Consider claim 86, Moorer teaches a device for determining filtering combinations of a spatial processing operation, the filtering combinations(see fig.6 (141,145) $(\ C^{Tsm'}_{l,m}\ )$ being intended to be applied to an initial sound field representation(see figs. 1 and 6 (135) and see col.3 line 5-28) $(\ P^{(I)}_{l,m}\ )$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation(see fig.6 (131)) $(\ P^{(T)}_{l,m}\ )$ formed by coefficients representative

field representative of that field in time and in the three spatial dimensions(see figs. 1,3,9 and 10), the method comprising:

Means (see fig.1 and see col.4 line 30-col. 5 line 56) for defining the processing operation by a set of at least one directivity function,

Means (see figs. 1-3 and, 9,10 and see col. 4 line 6-col. 5 line 40) for establishing spherical harmonic coefficients of each directivity function(see figs. 1 and 3);

Means(reads on equation (1)) for determining the filtering combinations(see figs -13,6) from the spherical harmonic coefficients(see col. 5 line 1-col. 6 line 67).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 75, 76, 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer(US PAT. 6,904,152) in view of Elko et al. (US 2003/0147539).

Consider claim 75 Moorer teaches characterized in that the sets of coefficients representative of the initial sound field representation (see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63); but Moorer does not explicitly teach that sets of coefficients called Fourier-Bessel coefficients.

However, Elko teaches characterized in that the sets of coefficients representative of the initial sound field representation and of the modified representation are sets of coefficients called Fourier-Bessel coefficients(see figs 1-3 and page 3 [0049]-[0062]).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching of Elko into the teaching of Moorer to can be implemented for orthogonal harmonic expansion.

Consider claim 76 Moorer as modified by Elko teaches the method further comprising specifying a parameter (L) representing the order limit of the Fourier-Bessel coefficients (In Elko, see figs 1-3 and page 3 [0049]-[0062]).

Claims 87 and 88 they are essentially similar to claims 75, 76 and are rejected for the same reason stated above apropos to claims 75 and 76.

Allowable Subject Matter

8. Claims 77, 79, 81, 85, 89, 91 and 93 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 74-94 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argued that Moorer fails "defining (2) via a programmed computer processor the processing operation by a set of at least one directivity function,

establishing (4) via a programmed computer processor spherical harmonic coefficients

of each directivity function, determining (6) via a programmed computer processor the

filtering combinations from the spherical harmonic coefficients," as in Claim 74 (see the

remarks page 20 3rd paragraph).

The examiner respectfully disagrees. Moorer discloses defining via a programmed

computer processor (reads on DSP see col. 6 line 35-62)) the processing operation by a

set of at least one directivity function, establishing via a programmed computer

processor(DSP) spherical harmonic coefficients of each directivity function(see figs. 1

and 3 and col.3 line 62-col. 4 line 65); determining via a programmed computer

processor(DSP) the filtering combinations(reads on equation (1)) from the spherical

harmonic coefficients(see col. 5 line 1-col. 6 line 67). It meets the limitation as recited in

claim 74.

Conclusion

10.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Doddrell et al. (US PAT. 7,088,099) is cited to show other related

method and system for processing a sound field representation.

11.   Any response to this action should be mailed to:

> Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

> Commissioner for Patents
> P.O. Box 1450
> Alexandria, VA 22313-1450
> Facsimile responses should be faxed to:
> **(571) 273-8300**

                  Hand-delivered responses should be brought to:
                        Customer Service Window
                        Randolph Building
                        401 Dulany Street
                        Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501 The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See
/LUN-SEE LAO/
Examiner, Art Unit 2614
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 06-09-2010

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614